NOR' WEST MINER

EDMONTON, ALBERTA

A monthly Devoted to Northern Mining Development in the Yellowknife, Great Bear and Great Slave Lakes, Goldfields, Alberta, and Northern B.C., the Tourist and Game Hunting Attraction of Alberta.

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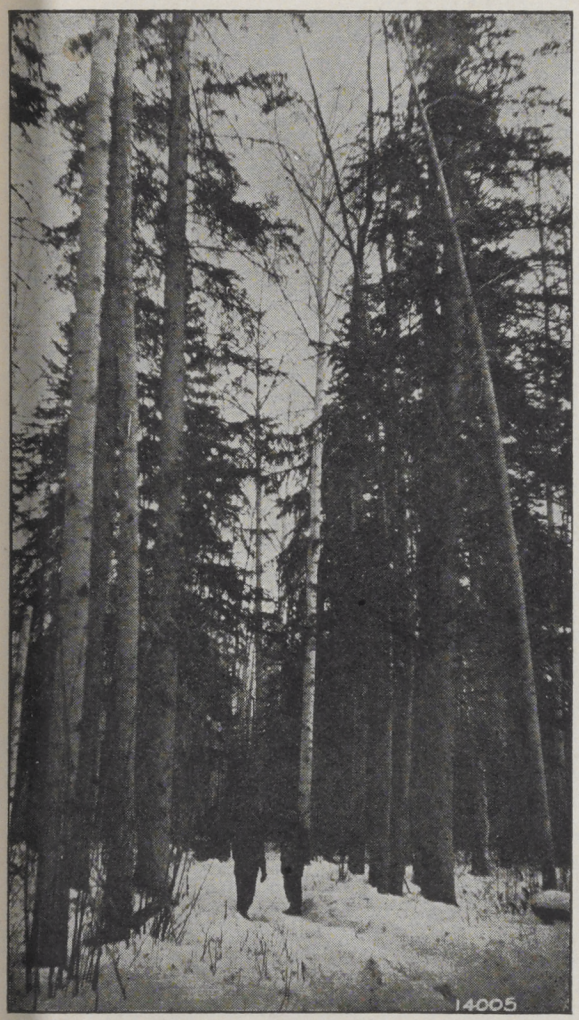
MERCURY DEPOSITS IN BRITISH COLUMBIA A WAR ASSET



A stand of fine Spruce near McMurray, Alberta

Yellowknife Answers the Empire's Call for More Gold by Steadily Increasing Gold Production

EDMONTON
Alberta

THE NOR' WEST MINER

A monthly devoted to Northern Mining Development in the Yellowknife, Great Bear and Great Slave Lakes, Goldfields, Alberta and Northern B.C. Mining districts, also the tourist and big game attractions of Alberta.

Correspondence solicited from all interested. Subscription, $2.00 a year, Post free. Advertising Rates on application. Address, 7421 81st Street, Edmonton, or Box 323 Edmonton, Alberta. Phone 31968.

SAYS THE MINER . . .

Fearless and unafraid the mother country of the British Empire has taken up the gauntlet thrown by the Hun and his Italian jackals.

Fearless and unafraid she is facing the rest of the little wolves, who have commenced to gang up in the hope that the Old Lion is on its deathbed and that they can grab a chunk and get away with whole skins.

She is working, planning and fighting to keep the Old Flag flying high as ever, and Canada is determined to assist the Mother of All that is worthwhile in Empire civilization. Let us hope that the Mackenzie Government will not flag or hesitate to take any and all steps to see that no Hun or his jackal shall set foot on the sacred soil of Canada.

* * *

The search for war minerals is taking a prominent place in the economic line up of Canada's war industry. To make tanks, guns, ammunition and other essentials of war, it is necessary to have an unlimited supply of various important minerals, such as mercury, tungsten, manganese, etc. Accordingly, twenty seven parties sent out by the Dominion Government have received special instructions concerning geologizing for such minerals.

In addition, the Dominion Government has already emphasized the need for greater gold production so necessary to aid the foreign exchange situation, and the larger mining companies are responding to the call for still more gold by arranging for increased production from the known mines.

Never was there a greater need than today for another S. African Rand, another Klondike or some othere great placer gold discovery. Never was there a greater need for an army of prospctors to search the hinterlands of Northern B.C., Alberta and the Territories for such a find. Never has there been greater prospects of discovering such than in those hinterlands adjacent to Edmonton.

The Omineca, the Finlay, the Head of the Peace, Atlin, Dease-Stikine and the Klappan—the western side of the northern Canadian Rockies—The Bell and the Porcupine Rivers—the numerous streams of the great Mackenzie and the whole of the great interior plateau of British Columbia has, without a doubt, one or more new Klondikes. Someone will discover it someday. That day can come now when it is most needed, if those who can afford it will join in and help grubstake the many experienced but idle prospectors who are only blocked from making the search by lack of equipment necessary to conduct the same.

Be patriotic—help Canada get more gold by helping the prospector to go out and find it.

Mining Progress In Northwest Territories

Mining in the Mackenzie District of the Northwest Territories continued active during 1939, according to the Department of Mines and Resources, Ottawa. Although field exploration and staking of new claims did not reach the peak of 1938, extensive prospecting and geological survey work was carried out north of Great Slave Lake. The gold discoveries made in 1938 at Wray Lake, Snare River Beaulieu River, and Francois River, were further developed last year, and new gold finds were made near Desperation Lake and copper was discovered at Barnston River.

Yellowknife was the principal field of activity, with three gold mines—Con, Negus and Rycon — producing gold and silver to the value of $1,799,775 in 1939. The aggregate output of these properties for the first quarter of 1940 had a value of $485,320. Development work was continued at several other promising gold properties.

One thousand tons of pitchblende concentrates were produced in 1939 at the property of Eldorado Gold Mines Limited, Great Bear Lake. These concentrates are shipped to Port Hope, Ontario, for refining and since the beginning of operations in 1933 the output of radium from this northern mine has passed the 100-gram mark. In addition, uranium compounds and other associate minerals have brought further substantial returns.

Output of petroleum from the oil wells on the Mackenzie River, fifty miles below Norman, totalled 17,013 barrels in 1939. Oil from this source is supplied to the mines at Great Bear Lake and Yellowknife, and the drilling of a third well and the erection of a new refinery unit to permit the production of aviation gasoline reflect the progress being made at this Far North oil field. The refining of aviation gasoline in the Northwest Territories is an important development, as previously there was only one refinery in Canada producing this grade of gasoline.

Another important development in the Mackenzie District is the erection of a hydro-electric plant, about twenty miles from Yellowknife settlement. Work on this project, which will involve the expenditure of more than a half-million dollars, is under way, and it is expected that the plant will be completed by the end of 1940. The advent of hydro-electric power is expected to permit the profitable working of several lower-grade ore properties, and will bring many additional comforts to the residents of Yellowknife, Canada's farthest north municipality.

PARTIES GO INTO HEAD OF FINLAY

Several parties of prospectors have recently gone into the country at the head of the Finlay River and along the Misalinka and Osalinka Rivers which are tributaries of the Omineca River. This country has been known for many years to present excellent placer mining opportunity.

ELDORADO RADIUM AND SILVER

It is to be hoped that the closing down of the radium mines at Great Bear Lake is not to become permanent. Should Congo Radium pass into the hands of the Germans, the Great Bear radium deposits will be the only ones within the empire of commercial importance and it is hard to conceive anything else but that further development will be imperative. Science is always discovering some new means of using radium deposits and so expansion of use for the same can be assumed. Financially Eldorado has had a hard row to "hoe". The difficulties of mining, shipping in machinery and supplies and bringing concentrates out are tremendous and it speaks well for the management that it has succeeded in carrying on for so many years. The outstanding need for successful development is without a doubt cheaper transportation. Such must come, if and when the winter road from Grimshaw to Great Slave Lake is turned into an all weather highway. When this is done it will be possible to avoid long and tedious water haul of ores. One of the great drawbacks, as some see them, to successful production has been the fact that it takes over a year to get radium concentrates to Port Hope for treatment. In the meantime, this valuable ore has to carry heavy insurance charges, in addition to tying up capital invested over a long period.

It should also not be overlooked that Eldorado mines carry other excellent high grade minerals besides radium, and the silver deposits are outstanding.

In any case any investment made in Eldorado stock need not be looked upon as a loss, for it cannot, from a mining point of view be considered a losing proposition once the matters mentioned are adjusted. The market for radium ore is in its infancy as to its requirements.

MERCURY ... Most Important For War!!

A very interesting Bulletin has recently been published by The Mines Branch, Govt. of British Columbia, Victoria, B.C., concerning Mercury deposits in British Columbia. To those interested in ascertaining the formations, methods of working deposits, etc., of this most valuable war material, the booklet furnishes a mine of information. Copies can be obtained by addressing the above. We reprint the descriptive enumerating mercury minerals, Geological occurrences, Ore habits, method of mining and treating the ores, also the economics of production and consumption.

Although there are approximately twenty-five mercury minerals, only one, cinnabar, is of commercial importance. Eleven of the twelve minerals described below occur only sparingly and the remaining mercury minerals are extremely rare. The properties of these twelve minerals are listed below:

Cinnabar — Composition: mercuric sulphide, HgS = mercury, 86.2 per cent., sulphur, 13.8 per cent. Lustre adamantine. Colour scarlet-red to brownish-red. Streak, scarlet to reddish-brown. Hardness, 2 to 2.5 Fracture uneven. Tenacity, brittle to sectile. Specific gravity, 8 to 8.2.

Native Mercury — Lustre metallic, brilliant. Colour tin-white. Specific gravity, 13.6. Commonly occurs as small, liquid globules scattered through gangue or sheared wall-rock; probably reduced from cinnabar by hydrocarbons.

Amalgam—Composition: an alloy of silver and mercury of varying composition; arquerite, an amalgam containing approximately 85 per cent. of silver, found in Vital Creek, Omineca District, British Columbia. Color and streak, silver-white. Opaque. Hardness 3 to 3.5. Fracture uneven. Brittle to malleable. Specific gravity 13.75 to 14.1.

Metacinnabarite — Composition: mercuric sulphide, HgS. Colour, black Occurrence, black crystal or more frequently massive, it is a secondary sulphide deposited by descending waters.

Calomel (Horn quicksilver)— Composition: mercurous chloride, HgC1. Lustre, wax-like. Colour, white yellowish-grey, grey, brown, translucent to sub-translucent. Streak, pale-yellowish-white. Hardness, 1 to 2. Specific gravity, 6.5. An oxidation product of cinnabar. Rare.

Montroydite—Mercuric oxide, HgO. Colour, red. An oxidation product of cinnabar. Rare.

Eglestonite and Terlinguaite— Oxychlorides of mercury. Colour, yellowish, turning to brown or green on exposure. Oxidation product of cinnabar. Uncommon, but fairly abundant at Terlingua, Texas.

Coloradoite, Tiemmanite and Onofrite—Primary; rare telluride, selenide and sulpho-selenide of mercury, respectively.

Mercurial Tetrahedrite—A not uncommon form of tetrahedrite containing up to 17 per cent mercury.

Geological Occurance of Cinnabar

Cinnabar occurs in a great variety of rock-types. However, it is never of sedimentary origin, but is always associated with some manifestation of igneous activity, although the relationship may not be as evident as with other types of ore deposits. Cinnabar has been deposited under conditions of low temperature and pressure, therefore, mercury ores occur close to the surface that existed at the time of deposition.

Relatively few ore-minerals accompany cinnabar; the most common ones are pyrite, stibnite and reaglar. The most common gangue-minerals include opal, chalcedony, quartz, calcite and particularly in the Kamloops Lake area of British Columbia, veindolomite. Carbonate-alteration, or carbonization of the wall-rocks, is common; this type of alteration is wide spread in the Kamloops Lake and Yalakom River areas of British Columbia.

Habit of Ore

In most mercury mines the ore occurs in irregular fractured or brecciated zones, or otherwise porous rocks. In these relatively open-textured rocks the cinnabar occurs as thin, discontinuous stringers, or as scattered blebs and small grains. In the larger deposits these brecciated zones, or por-

ous masses of rock, are capped or bounded on one side by a relatively impervious layer which may consist of either clay gouge or otherwise impervious stratum of rock, such as a lava flow.

Such structural conditions permitted the ready passage of cinnabar-bearing solutions under no great pressure, and, subsequently caused, the trapping and deposition of the sulphide from these solutions. The ore-bodies are irregular and frequently of indefinite limits; although the form may in some degree be controlled by the attitude of the enclosing rocks or faults.

The deposits are commonly associated with volcanic rocks and frequently with hot springs in regions of volcanic activity. However, the mercury-bearing solutions do not necessarily originate in the volcanic rock themselves, but rather in the same deep-seated magma-basins in which the volcanic rocks were differentiated; for that reason, cinnabar deposits may be found far from volcanic or intrusive igneous rocks.

The most favourable structure for a cinnabar deposit is one that will not only give easy access to the mineralizing solutions, but will also trap and dam them so as to localize and concentrate the cinnabar. Such open structures are afforded by sandstone, or sandy-limestone, and by brecciated and fractured zones in other rocks. The damming structure is usually supplied by overlying lava or argillaceous sediments such as shale, or by clay-gouge along a fault plane. The complete structure may not exist at the present erosion-level, but its previous existence is certainly desirable as an indication of large bodies of ore. It may be mentioned that no large bodies of ore have formed as a result of enrichment of smaller bodies by precipitation from oxidizing solutions such as has occurred in some chalcocite copper deposits.

The producing mercury mines in America are all low-tonnage operations; the largest mine, the New Almaden treated not more than 400 tons per day when at the time of its maximum production: most of the mines in the United States mine 20 to 100 tons per day.

Because of the characteristic erratic distribution of cinnabar deposits, it is both difficult and costly to develop ore-reserves; as a result most mines never have much ore blocked out, the amount ranging from enough for one day to sufficient, at the most, for one year's operation.

The mining of cinnabar deposits differs little from that of other lode-mining, and only such features of the ore that tend to modify usual mining-practice are mentioned.

As a result of the common occurrence of cinnabar close to the present surface of erosion, open-pit and other surface excavation types of mining are common. Owing to the brittleness of cinnabar, abundant fines are made during mining operations and special provisions should be made to save the fines, particularly in the construction of chutes.

Ventilation

Ventilation in a mercury mine should be good. At ordinary mine temperatures there may be a volatilization of mercury from droplets of native mercury that occur in some deposits, but good ventilation will eliminate any poisonous mercury fumes. It is to be noted that the mineral cinnabar, which is the chief ore of mercury, does not give off mercury fumes at ordinary mine temperature.

Sampling

Owing to the brittleness of cinnabar and its occurrence as discontinuous veinlets and isolated blebs, which are both large and small, accurate sampling of cinnabar deposits is extremely difficult. Ordinary channel-sampling is reliable only in low-grade deposits, or in the unusual deposits in which the cinnabar occurs evenly disseminated throughout the rock. Panning of numerous samples from rock faces is common in operating mines, and when done by an experienced panner will give excellent results; checks within a limit of error of 0.1 per cent mercury have been reported.

Metallurgy

The metallurgy of mercury ore involves the breaking down of the ore-mineral cinnabar into elemental mercury either by roasting in the presence

of oxygen or retorting in the absence of oxygen. In the roasting process the mercury is driven off as mercury vapour and the sulphur is oxidized to sulphur dioxide gas, SO_2; the mercury vapour is subsequently condensed to liquid mercury in cooling condensers, and the sulphur dioxide gas escapes into the atmosphere. In the retorting process, lime is commonly added to the ore to combine with the sulphur of the sublimed mercuric sulphide to form calcium sulphide and sulphate and the mercury vapour of the dissociated sulphide is condensed in cooling condensers in the same way as in the roasting process.

Chemistry

To aid in understanding the metallurgy of mercury, some pertinent chemical data will be given. Mercury boils at 357.3 degrees C. (675.1 degrees F.) under normal atmospheric pressure. Cinnabar (mercuric sulphide) sublimes directly to mercuric sulphide vapour readily at 580 degrees C. (1076 degrees F.) at normal atmospheric pressure; the melting point of cinnabar is not known, but it lies above the subliming point. When cinnabar is roasted in contact with an excess of oxygen, it begins to oxidize at about 230 degrees C. (428 degrees F.) and at 450 degrees C. (842 degrees F.), oxidation is rapid; the oxidation takes place largely in the vapour phase. Retorting is carried out in the relative absence of oxygen and mercury is not released readily from cinnabar until near the sublimation temperature of 580 degrees C. (1076 degrees F.).

Effect of Impurities

Arsenic and antimony compounds are the only impurities which may be found in the ore that are sufficiently volatile to interfere with the extraction of the mercury. Arsenic compounds are the most serious impurities in roasting processes because the boiling point of arsenic trioxide, which is 355 degrees C. (671 degrees F.), is very close to that of mercury, which is 357 degrees C. (675 degrees F.) However, a slight modification of the treatment process is usually sufficient to overcome the contamination of the mercury by the arsenic trioxide vapour. Antimony oxides have boiling points much lower than those of mercury and a relatively simple modification of the condenser system will effect a condensation of the antimony oxides from the furnace gases at temperatures well above the condensation temperature of the mercury.

Types of Furnaces

Of the two main metallurgical processes, roasting and retorting, roasting is by far the more satisfactory and usual practice.

Several types of furnaces and kilns are used in the roasting processes; these include the coarse-ore, Scott and Armak-Spirck shaft-furnaces, and two types of mechanical roasters, namely Herreschoff furnaces and rotary-kilns Of these types of furnaces only two are in common use in America, the Scott furnace and the rotary-kiln. The Armak-Spirck furnace, a similar type to the Scott, is used largely in Europe.

The main features of these furnaces will be briefly described.

Coarse-Ore Furnace — The typical coarse-ore furnace is a simple ,internally-fired shaft-furnace that uses charcoal or coke mixed with coarse ore; the pieces of ore are preferably over $2\frac{1}{2}$ inches in size, fine ore cannot be treated. This type of furnace is rarely used in America.

Scott Furnace—The Scott furnace has been, until a few years ago, used almost exclusively in America. The rotary-kiln has been gradually superseding it

The Scott furnace is a large brick structure, the outer walls of which are made of ordinary brick and the inner walls lined with fire-brick. The furnace consists of one or more pairs of narrow shafts which contain fire-clay shelves or tiers each set at 45 degrees. The ore is fed into the top of the furnace and it moves down by gravity in a zig-zag from tier to tier against the hot gases issuing from the furnace-box through ports on the side. The mercury vapour and sulphur dioxide gas pass off from the roasted ore through ports towards the top of the side of the furnace.

Scott furnaces are favoured at many mines because they have high-feed efficiency, and, because of the absence of moving parts, also maintenance cost. However, with ores containing

much pyrite, an excess of mercurial soot is formed which when absorbed by the furnace bricks creates a loss of mercury. Scott furnaces can be used for small as well as large operations. as furnaces of as low as 10-ton capacity have been satisfactorily operated.

Cermak-Spirck Furnace—The Cermak-Spirck furnace, used extensively in Europe, is a modification of the Scott. It is not used in America.

Mechanical Furnace—Of the mechanical furnaces, the Herreschoff hearth furnace and the rotary-kiln are the two important types.

Herreschoff Furnace—In a Herreschoff furnace the ore is fed into the top of the furnace and falls on to a series of superimposed horizontal hearths. The material is stirred by rakes or rabbles set on radial arms that are revolved by a central shaft; these rakes stir the ore to the edges of each hearth and it drops to necessarily lower hearths. In this manner fresh surfaces of ore-fragments are continually exposed to the rising hot gases that pass through the ore from a fire-box on the periphery of the furnace shaft. The escaping gasses, mercury vapour and sulphur dioxide, pass off through a port at the top of the furnace and into dust precipitators and condensers.

Herreschoff furnaces are not widely used because the fuel consumption is high and a considerable amount of dust is created by rakes. This dust must be precipitated from the gas-stream before the gas enters the condensers, adding again to the operating cost.

Rotary-Kiln—The first recorded use of a rotary-kiln was in 1903 at the Socrates Mine in California, but it was not until 1918 with the installation and continued operation of a rotary kiln at the New Idria Mine in California, that their use became established. At the present time a rotary-kiln is the more common type of furnace used on this continent.

A rotary-kiln consists of a revolving plate-steel tube set on a slope that may range from $\frac{1}{3}$ an inch to $1\frac{1}{2}$ inches to the foot. The tubes range in diameter from 18 inches to 5 feet and in length from 16 feet to 75 feet; corresponding capacity of single tubes range from 8 tons to 150 tons per 24 hours. The daily capacity of any one furnace is also dependent on the nature of the ore, coarse ore overroasting more quickly than soft fine ore. The capacity of a plant may, of course, be increased by increasing the number of kilns.

The ore is fed into the upper end of the tube, and as the tube revolves the ore works towards the lower end against the hot gases rising from a high-pressure oil-burner at the lower end; the speed of the tube ranges from one revolution in $1\frac{1}{2}$ minutes to $82\frac{1}{2}$ revolutions per minute. The mercury vapour and sulphur gases are drawn from the upper end of the tube through dust-precipitators and condensers.

A marked difference in operation between the Scott furnace and the rotary-kiln is, that whereas a roast requires approximately 24 hours in a Scott furnace, it takes but 30 to 50 minutes in a rotary-kiln.

Retorts — Retorting differs from roasting in that very little oxidation of the cinnabar occurs; the flames are around the ore-container and are never in direct contact with the ore as in roasting furnaces.

Retorts are cast-iron containers of either circular or D-shaped cross-section. They are commonly about one foot in diameter, 15 feet long, and are horizontally-mounted either singly or in batteries in a single furnace.

The retort-charge may consist of ore, or if the material contains much pyrite, lime is added to combine with the excess sulphur, otherwise mercuric sulphide, and not mercury, will be deposited in the condenser.

Retorts are the earliest type of furnace used, and it is reported that the Chinese operated them exclusively, but they are not in common use at present. They are largely used in the very early stages of development of a property, for the treatment of special high-grade ore, or as an accessory to a larger furnace-plant for the treatment of mercurial soot. Their disadvantages are, high construction costs per unit-capacity and high labour and fuel costs.

Condensers

The mercury vapour that comes from the furnaces, kilns or retorts is first passed through dust-collectors to clean it from dust and then through condensers, first to cool the gas-stream and then to condense the mercury.

The dust-collectors are of two types the cyclone type in which the velocity of the gas-stream is greatly reduced and the dust-particles settle by gravity, and the Cottrel type, whereby the dust particles are electrostatically precipitated.

The gas-stream issues from the furnaces at about 300 degrees C. (572 degrees F.) and is cooled by contact with the cool walls of the condenser; it is, of course, desirable that the conductivity of the condenser-wells be as high as possible. Practically complete condensation of the mercury-vapour can be accomplished if the final temperature of the gas-stream is about 30 degrees C. (86 degrees F.). After passing through a cyclone-chamber the velocity of the gas-stream is greatly reduced from that possessed by it at the time of issuance from the condensing system, the mercury, cooled to a mist of droplets, will readily condense as liquid in the conical-shaped bottom of the condenser.

Condensers are made from either brick, wood, glazed tile or acid-resistant metal alloys; glazed tile and alloys are in common use at present

The mercury is tapped from the condensers into cast-iron pots and from these into 76-pound wrought-iron or pressed-steel flasks for shipment.

Mercurial soot commonly collects in the condenser-systems, and is usually collected from the condensers once a month. This soot consists of small aggregates of mercury droplets and dust or of mercury compounds and dust. The mercury droplets and dust can be cleaned by raking or trowelling on a smooth surface; these mercury globules will coalesce and can then be collected into a pot. Dust containing mercury compounds must be retorted; this is usually done in small D-retorts accessory to the main plant.

Commonly, the mercury as collected from the condensers, will contain a small amount of base-metal amalgam. This can be collected by slightly aerating the mercury, whereby the amalgam will collect on the surface and can then be skimmed off. This is simpler than straining the full pot of mercury through a chamois cloth.

Concentration of Mercury Ores

Numerous attempts have been made to concentrate mercury ores by the same methods as are used in the concentration of the ores of gold and the base metals, but results have not been commensurate with the time and money spent. Reasonably good results can be obtained by flotation or by a combination of gravity-concentration and flotation, but the marked tendency of cinnabar to form abundant slimes makes high recoveries difficult. It must be remembered that the concentrate when obtained, must be roasted or retorted to recover the mercury from the cinnabar concentrate. At the present time, processes of concentration of mercury ores have not been so perfected as to replace the direct furnace-treatment of the ore.

Economics of Mercury

The chief mercury producing countries are Spain, Italy and the United States; smaller producers include Mexico, China and Russia. Spain, Italy and Russia are reported to control three-quarters of the world production (Mining and Metallurgy, May, 1939) The major consumers are the United Kingdom, United States, Germany, France and Japan; the most noticeable recent development being the increase in rate of consumption in the United Kingdom and Germany in 1938 over the high rates of 1937.

The increased consumption of mercury in 1937 over that of 1936 was accompanied by renewed activity in mercury mining. The mines in Italy and Spain are reported to be operating at capacity. Italy responded by increasing its production in 1937 and maintained the increase in 1938 and 1939 to more than two and a half times the average for the preceding five years. Even with the cessation of the Spanish war, Italy will probably continue to supply a larger part of the world's production than she has in the past. Spanish production has continued to increase since the Civil War, reaching a record monthly production of 22,000 flasks in December, 1939. It may be noted that the Almaden district in Spain was never the scene of fighting and the mine equipment is reported to have been handed over to General Franco in perfect order. The mines in the United States were very active in the first half of 1937, but a decline in demand and decrease in the price caused a drop in the rate of production from these mines during the latter half of 1937. However, production increased from 16,508 flasks in

1937 to 17,991 flasks in 1938 and, to an estimated production of 18,343 flasks in 1939.

Germany has recently attempted to develop domestic resources, but has been unable to curtail the amount of her imports

Normal international trade was somewhat hampered by the civil war in Spain, but ample supplies have always been available.

WAR AND MINERALS

Those who remember the dark years of 1914-18 and their effect on mining promotion can easily understand the present situation where capital is practically non-existent for new mining, excepting that available amidst the large mining companies. It is therefore pleasing to note that development and production is still going on in the Yellowknife areas. This is more than creditable as it is, generally speaking, the newer camps which suffer the greatest set-backs at such times as at present.

TO REOPEN OUTPOST ISLAND

It is stated that an inspection is at present being made at Slave Lake Gold Mines Ltd. on Outpost Island with a view of reopening the mine for its Tungsten content.

CONTINUES DREDGING ATHABASCA

The work of dredging the lower Athabasca River is being continued. Contractor Cummings is at present on the job at the Delta.

THAT SUBSCRIPTION OF YOURS

We hate to say it, but many people are of the opinion that the last thing to be paid is a subscription to a mining magazine. The Nor' West Miner depends upon its subscribers for the wherewithal to keep going. It is admitted that there is a war on and so perhaps economy insists on cutting out wherever possible, but people interested in northern mining and industrial development must olso be interested in the only direct medium which has given the Northern picture of development regularly and steadily for the past eight years. When you read this copy, why not look up and see whether your subscription is paid up, and if not, send it along . . . Thanks.

NATIONAL REGISTRATION

National registration is a real step towards the co-ordination of Canada's war effort in the right direction. The only pity is that such a step was not taken last September when war was declared.

A lot of work was done at that time in registering at Ottawa, all those who were willing to help. Thousands of people eagerly proffered their services the majority without any eye on what there was to be in it as to remuneration. These thousands received a graceful letter of thanks to the effect that they had been placed on file and most of them, if not all, are still on file at Ottawa. If national registration is to be effective it should be complete in every way possible. Millions of Canadians want to do their bit towards beating the Hun. They are awaiting orders. Surely Ottawa must now give orders. That is what the people elected the Government for early in the war year of 1940.

GORDON LAKE

The possibilities of disclosing commercial sources of gold in the Gordon Lake area, Northwest Territories are by no means exhausted, says Dept of Mines, Ottawa.

Occurrences of gold are plentiful, chiefly in the sediments of the 300-square mile region. For the most part, however, the deposits so far discovered are not large, although some of them could probably be developed successfully were it not for the high cost of such work in a region so far distant from rail transportation.

A preliminary map of the area issued recently by the Department of Mines and Resources shows that outcrops in the area are abundant, a feature which makes for easy prospecting. Based on field investigations by J. F. Henderson, the map shows the geology of the region on a scale of one half mile to the inch, a scale sufficiently large to show geological features in considerable detail. The map shows also elevations and the locations of buildings, portages and trails, rapids and falls, and marshes. Copies may be obtained from the director, Mines and Geology Branch, Department of Mines and Resources, Ottawa.

PROVIDES FOR DEFENSE OF ALASKA

The U. S. Senate recently passed an appropriation of nearly thirteen million dollars to provide airbase, gas and bomb storage in Alaska. Army chiefs are stated to have been very emphatic as to the importance of providing Alaska with suitable defence. Canada must be particularly interested in this as the north-western part of B. C., the N. W. T. and Alberta are on a most direct and short route through to the industrial centres of the middle U. S. from Alaska.

FACTS CONCERNING ALASKA AND THE NORTH PACIFIC

American advices state that, without becoming alarmists, considerable interest is being focussed on Alaska and the North Pacific by naval men. There is curiosity as to what is the meaning of the fortifying of Bering and Medny Islands off the coast of Alaska by Russia. It is stated that in December last year a group of German naval officers arrived at Nikolasvsk-Amur, flew from there to Komandorskie Island in Russian naval planes and remained there until late in January this year. Some 20 German submarine commanders also visited the same place in January, together with Diesel experts. Some came direct from Germany, others from the U. S. and Mexico. Some after visiting the island went northward to China and the Far East. Komandorski Island is only 260 miles from the Aleaution Islands which are a part of Alaska.

THE ALASKA HIGHWAY

Whilst advices from Ottawa indicate that the Alaska Highway project will probably remain in abeyance during the war, it is interesting to note that a bill has been introduced into the U. S. Congress asking for an approximation of $25,000,000 for the building of the Alaska Highway. The bill authorizes President Roosevelt to get Canada's consent for the construction work necessary in Canada, with perhaps some money spent directly on the Canadian section by the U. S. in addition to loaning Canada some part of it. It also calls for all material to be of American manufacture as far as that part of the road built in Canada directly by the U. S. Government. The life of the Alaskan Highway International Commission has also been extended for another four years.

SURVEY PARTY GOES NORTH

The first British Columbia-Alaska Highway survey party recently left Prince George, headed by Norman Stewart and Hugh Pattinson. This party will do triangulation and topographical work between Sifton Pass and the Liard River.

STUART LAKE GOLD

Pioneer Gold Mining Co. of B.C. Ltd. are at present engaged in developing a stibnite-gold mining property at Stuart Lake, 12 miles west of Fort St. James in B.C. A shaft has been sunk for 40 feet and drifting has been done for 250 feet with very encouraging results.

ANOTHER PRESERVE

Another preserve is being established in the North. This time the Athabasca Delta is being considered as a rat preserve under the sponsorship of the Indian Dept. This is the region where our American duck preserving friends have been casting envious eyes and no doubt with the establishment of a rat preserve, the ducks will also enjoy the peace and quietitude of the vast marshes and so multiply in number. One thing however has been overlooked, rats like young ducks and never miss an opportunity of taking a bite at them.

HELP THE SMALL MAN

The Dominion Government has gone on record that it will encourage the production of gold as much as possible as a war measure. It is well known that there are many showings of high grade surface gold on numerous claims in the Yellowknife which could be worked at small expense by means of small mills. Here is a chance where the Dominion Government could increase gold production by giving financial assistance to many small claim operators who, at the present time, from lack of financial means, have to sit idle and implore the Government to give them extension of time for assessment work, etc.

RAM RIVER OILS ACTIVE

Ram River Oils announce that the new hole is now down 400 feet and that work of reaming and casing is in progress. This is the second test hole to be put down on this property which is characterized by geological experts as being on one of the finest oil formations in Alberta.

"SONGS OF THE NORTH"

J. W. Horan, author of "Songs of the North, is a prospector and pioneer of the Western mining areas. He was born in Sheffield, England in 1908 of Irish parentage. He started working in a coal mine at the age of fourteen. After passing exams. for mining skill in 1928, he emigrated to Canada and worked in Alberta coal mines. Joining the staff of the Consolidated Mining and Smelting Co. at Trail B.C., he got his first experience in hard rock mining. He has worked in many camps since, both in Ontario and the West. He went to Goldfields, Saskatchewan in 1936, at the time of the mining rush to Lake Athabasca, and from thence to the Yellowknife in 1937. He helped sink the shaft on the Rycon property, for which the Consolidated Mining and Smelting Co. paid over half a million dollars, and also spent much of his time in bush exploratory work for the same company. An old Imperial Army man, he flew from Yellowknife to Edmonton to answer the call when war broke out, and is only absent from the front line in Europe owing to medical disability which he says is "the weeds".

"Songs of the North" some say are almost equal to Services' Tales of the Klondike.

Copies costing $1.00 post free can be obtained from the Publishers, Nor' West Miner, Box 323, Edmonton, Alta.

CON TO OPERATE TOMPSON LUNDMARK

Northern reports state that an arrangement has been made between the Consolidated Mining and Smelting Co. and the Thompson Lundmark Gold Mines Ltd. for the development of the latter's holdings.

1940 FIELD PROGRAM

Thirty-seven geological and topographical survey and exploration parties, comprising a force of about 170 men, have been assigned to field work this year by the Mines and Geology Branch, Department of Mines and Resources, Ottawa. These parties, most of which will be leaving Ottawa in the immediate future, will map and investigate areas in every mineral producing province in the Dominion and in Yukon and the Northwest Territories.

In view of the wartime requirements of the nation, particular attention is being given to investigations in connection with such minerals as have a direct bearing on the war effort. The work is largely directed toward the extension of the gold mining industry which provides foreign credits now so essential, and toward an evaluation of resources in petroleum. An increased domestic supply of petroleum is necessary for wartime needs, and also to limit Canada's defence on foreign sources. Investigations will be made also of deposits of many of the so-called war minerals, such as chromium, manganese, molybdenum, and tungsten, which are of particular importance in the production of arms and munitions.

Twenty-six parties will be engaged in geological surveys and investigations, and eleven in topographical mapping. In addition, two topographical parties will be employed on supervisory work. Of the geological parties three will be in British Columbia, five in Alberta, one in Saskatchewan, two in Manitoba, two in Ontario, four in Quebec, one in New Brunswick, one in Nova Scotia, one in Yukon, and three in the North West Territories. In addition, one geological party will operate both in New Brunswick and Nova Scotia. Two other parties will be employed on the general investigation of deposits of war minerals, one in British Columbia and Yukon, and the other in the rest of the Dominion.

GOLD MINING ESSENTIAL WAR INDUSTRY

The Dominion Govt. and the large mineowners have got together and have decided that gold production is an essential war industry. Perhaps the fact that many placer prospectors are available in Alberta, British Columbia and the Territories may also give the Government the urge to see that these men are sent out to prospect for new placer areas. Placer gold is the easiest mined and the quickest way of increasing gold reserves, provided a strike is made.

NEGUS PRODUCES $65,000

June production at the Negus gold mine was $65,000. The Negus is easily proving its worth as a gold producer as its June production now brings its total production since February, 1939, to over a million dollars. The Negus mine perhaps holds the record for the small capital expenditure made in mill and mine installation as compared with similar developments elsewhere.

ALBERTA OIL

Present Daily Production, 26,000 BARRELS

DEPARTMENT OF LANDS AND MINES, EDMONTON